REMARKS/ARGUMENTS

Favorable reconsideration of this application as presently amended and in light of the following discussion is respectfully requested.

Claims 16-19, and 22-40 are presently active in this case, Claims 16 and 22 amended by way of the present amendment.

In the outstanding Official Action, Claims 16 and 22 were objected to and Claims 16-19, 22, and 36-40 were rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,284,149 to Li et al. in view of U.S. Patent No. 6,500,773 to Gaillard et al.

With regard to the objection of Claims 16 and 22, Applicants have amended these claims to correct the informalities noted in the Official Action. Therefore the objection to these claims is believed to be overcome.

Turning now to the merits, Applicants' invention is directed to a process for forming an integrated circuit structure using a tunable etch resistant antireflective coating (TERA) layer. As described in Applicants' specification, such TERA layers have generally been used in front end of line (FEOL) structures. However, the present inventors have recognized that use of TERA films as a lithographic structure, a hard mask, an antireflective coating or a chemical mechanical polishing stop layer, for example in back end of line (BEOL) operations can be beneficial. When forming a dual damascene structure, the TERA layer can be used to provide more accurate critical dimensions of the dual damascene structure, which allows larger scale integration. As discussed in the July 1, 2005 amendment, Gaillard et al. does not disclose use of a TERA layer in the context of a dual damascene structure.

Specifically, Gaillard et al. discloses an organosilicate material having various characteristics such as a tunable dielectric constant, tunable refractive index or tunable absorption coefficient. Figures 3A-3E of Gaillard et al. show the organosilicate layer 302 used as an antireflective coating to provide a simple etch feature in a substrate, rather than

providing a dual damascene structure. Figures 4A-4E show the organosilicate layer 404 used as a hard mask to etch an oxide film on a substrate surface. While the organosilicate layer 404 may be capable of being tuned, there is no indication in the discussion of Figures 4A-4E that the layer is actually tuned to provide a TERA layer with antireflective properties. Finally, Figures 5A-5E of Gaillard et al. disclose use of the organosilicate film 504 as a mask for forming the via portion of a dual damascene structure. Again, however, layer 504 is not stated in Gaillard et al. to be tuned to have antireflective properties. Nor is there any suggestion in Gaillard et al. that would motivate one of ordinary skill in the art to tune the layer 504 to have antireflective properties. On the contrary, Gaillard et al. emphasizes tuning the dielectric constant of the film 504 to minimize capacitive coupling between metal interconnects.[1]

Even assuming that use of a TERA layer to form a dual damascene structure can be gleaned from Gaillard et al., Applicants' independent Claim 16 is yet more specific in reciting that the TERA layer is etched to the width of a top opening of the dual damascene structure. As discussed in the December 22, 2005 amendment, the cited reference to Gaillard et al. does not disclose etching a TERA layer to the width of a top opening of the dual damascene structure. The outstanding Official Action acknowledges this deficiency of Gaillard et al., but cites Li et al. as correcting the deficiency.

However, Li et al. does not disclose an antireflective layer at all, but rather discloses use of hard masks to form a dual damascene structure. The outstanding Official Action attempts to remedy this deficiency by combining the TERA layer teachings of Gaillard et al. with the dual damascene structure of Li et al. But since Gaillard et al. does not teach or suggest using a TERA film to form a dual damascene structure, as noted above, then Gaillard

[1] Gaillard et al. at column 9, lines 3-13.

et al. cannot suggest the more specific limitation of etching the TERA layer to the width of a top opening of the dual damascene structure.

For the reasons discussed above, the combination of Gaillard et al. and Li et al. does not teach the process of Claim 16, and there is no motivation to combine these references to arrive at the invention claimed in Claim 16. Thus, Claim 16 patentably defines over the cited references. Moreover, Claims 17-19, 22 and 36-40 also patentably define over the cited references by way of their dependency from Claim 16.

Nevertheless, Applicants note that new Claims 39 and 40 provide an additional basis for patentability over Gaillard et al. As noted in the December 22nd Amendment, Gaillard et al. discloses only etching the organosilicate layer 504 to the width of the via, and thus does not meet the limitations of Claim 39. Moreover, Gaillard et al. discloses use of only a single organosilicate layer 504 in the dual damascene structure of Figures 5A-5E, and thus does not meet the limitations of Claim 40. The Official Action simply cites the hard mask steps of Li et al. as meeting the specific TERA related process steps of these claims without any indication of how or why one of ordinary skill in the art would modify Li et al. to meet the process steps. Applicants submit that this is improper, and Claims 39 and 40 provide an additional basis of patentability over the combination of Li et al. and Gaillard et al.

Consequently, in view of the present amendment, no further issues are believed to be outstanding in the present application and the present application is believed to be in condition for formal allowance. An early and favorable action is therefore respectfully requested.

Respectfully submitted,

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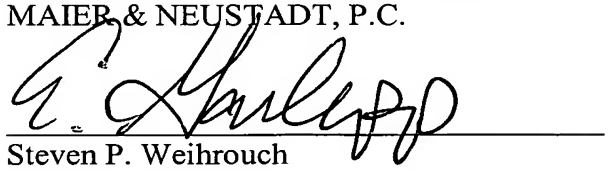

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